

Method of Preservation

[0028] Kidneys were perfused *en bloc* at 4°C and at 60 beats per minute with either 1 liter of UW-MPS (Belzer-MPS, TransMed Corp., Elk River, MN), Belzer I-Albumin (Sunny-Downstate, Brooklyn, NY), or the Machine Perfusion Solution (Storage) (MPS) of the invention. The Belzer solution, which is also the Control-Belzer solution, is described in U.S. Patent Nos. 4,798,824 and 4,879,283. The Albumin solution contained, per liter, 17.5 g sodium bicarbonate, 3.4g potassium dihydrogen phosphate, 1.5g glucose, 9g glutathione, 1.3g adenosine, 4.7g HEPES, 200K units penicillin, 8mg dexamethasone, 12mg phenosulphathelein, 40 units insulin, 150 mL serum albumin, and 1g magnesium sulfate. In each of the solutions, the kidneys were perfused on RM3 organ perfusion machines (Waters Instruments, Inc.®, Rochester, MN), which provide a fixed-pressure system that allows adjustment to the perfusion pressure, as needed. All kidneys were perfused at a systolic pressure below 60mmHg. Perfusion characteristics (FL, RES, PT, [Na+], [Cl-], [K+], [Ca++], and pH) were measured when the kidneys were placed on the machine perfusion system, every 30 minutes for the first 2 hours of MP, and every hour thereafter throughout the period of MP. All chemical data were compared to a baseline assay of perfusate that had not circulated through the kidneys. All perfusion characteristics were standardized to 100 g of tissue weight.

Analysis

[0029] The following biochemical components of perfusate were measured every hour throughout MP with an Omni 4 Multianalyte system (Omni, AVL Medical Instruments, Atlanta, GA): [Na+], [Cl-], [K+], [Ca++], and pH. All biochemical assays were standardized to 100g of tissue weight. For each measurement, a 0.5cc aliquot of perfusate is drawn from the perfusion chamber, analyzed by the Omni, and is available for evaluation within 30 seconds.

Statistical analysis

[0030] All data are reported as mean values \pm SEM unless otherwise noted. Paired and unpaired student's t-tests were used where appropriate. All statistical analyses were performed by Statview 4.5 software (Abacus Concepts, Berkeley, CA).

EXAMPLE 1

Comparison of selected donor, preservation, and outcome variables by method and type of preservation (mean +/-SEM)

n = number of recipients

ns = not significant

Donor Characteristics	MPS (n=82) (Embodiment of Table 3)	Belzer-MPS (n=80)	p value (unpaired student's t-test)
Donor age (y)	62.8	64.2	ns
Final serum creatinine (mg/dl)	1.2	1.1	ns
Preservation characteristics			
Cold ischemic time (h)	28	27	ns
Outcome characteristics			
Delayed graft function (%)	11	21	0.03
1 yr. function (%)	95	95	ns

EXAMPLE 2

Comparison of selected donor, preservation, and outcome characteristics by method of machine perfusion solution (mean +/-SEM)

PGE1=prostaglandin E1(500mcg/L)

NTG=Nitroglycerin (5mg/L)

	PGE1 (n=152)	NTG (n=50)	PGE1+NTG (n=48) (Embodiment of Table 3)	Control- Belzer -MPS (n=140)	p value unpaired student's t- test)
Donor Characteristics					
Donor age (y)	41.1+/-6	44.3+/-5	42.2+/-9	44.1+/-5	0.72
Final serum creatinine (mg/dl)	1.0+/-0.2	1.2+/-0.3	0.9+/-0.2	0.8+/-0.5	0.45
Intraoperative urine output(ml)	240+/-80	220+/-90	300+/-100	240+/-60	0.56
Preservation characteristics					
Cold ischemic time (h)	24+/-4	23+/-4	22+/-6	23+/-4	0.61
Perfusion time (h)	17+/-3	19+/-6	15+/-8	16+/-5	0.33
Outcome characteristics					
Immediate function (%)	85+/-3	84+/-4	89+/-3	85+/-5	
Delayed graft function (%)	10+/-3	13+/-4	9+/-2	18+/-4	
3 month function (%)	95+/-4	93+/-2	96+/-3	87+/-5	